

① E-A 10251294

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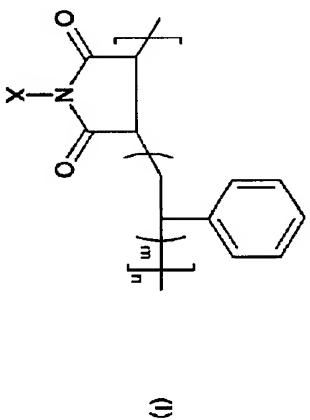
2004-402323/38 EMS-CHEM AG 2002.11.04 2002-1051294(+2002DE-1051294) (2004.05.19) C08L 7700, C08J 5/04	A23 (A13 A95) *DE 10251294-A1	INVE 2002.11.04 A(4-C1A, 4-D8, 5-F1B1, 5-F1B2, 8-R1, 10-C3)
<b>Polyamide molding composition for producing high gloss, rigid articles, useful particularly as automobile components, is mixture of semicrystalline linear, amorphous and branched graft polyamides, plus filler</b> <b>C2004-150952</b>	<b>Addnl Data: SCHWITZER A H, HEWEL M, SCHMID E, LAUDONIA I</b> <b>NOVELTY</b> Molding composition for producing high gloss, rigid polyamide shaped articles comprises 100 parts polyamide (PA) mixture (A); 40-235 parts reinforcing filler (B) and usual PA formulation additives (C).	(1) 0.5-95% semicrystalline linear PA; (II) 5-99% branched graft PA; (III) 0.5-40% amorphous PA; and (IV) 0-2% carbon black. (i) has a styrene-maleimide basic structure of formula (1) and/or (ii) is produced by hydrolytic polymerization of amino acids and/or lactams as basic components, with addition, to the melt of these components, of the following branching components (i) 5-150 $\mu$ mole/g polymer of at least one trifunctional monomer, derived from an amine or carboxylic acid monomer, and (ii) 2-100 $\mu$ mole/g polymer of an at least bifunctional monomer, i.e. a carboxylic acid when (i) is derived from an amine or an amine when (i) is derived from a carboxylic acid.

DETAILED DESCRIPTION

Molding composition for producing high gloss, rigid polyamide shaped articles comprises 100 parts polyamide (PA) mixture (A); 40-235 parts reinforcing filler (B) and usual PA formulation additives (C).

(A) contains, by weight:

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$m = 1-5$ ;  
 $n = 3-15$ , such that molecular weight of the basic structure is 600-9000;  
 $X$  indicates the position of the grafted polyamino acid sidechain  
. An INDEPENDENT CLAIM is also included for shaped articles  
prepared from the new composition.

USE

The composition is used to prepare shaped articles, particularly of  
large wall thickness, by injection molding; (blow) extrusion; gas/water  
internal pressure techniques; deep drawing etc., for use in industrial,  
optical, electrical or sanitary applications, or as automobile

components.

ADVANTAGE

Addition of the graft polymer (III) provides moldings of excellent  
surface gloss, especially over 75 at angle 60°; also better processing  
properties; higher flowability; better mechanical properties  
(particularly in the conditioned state after uptake of moisture);  
excellent shape stability when warm and only moderate processing  
temperatures are required.

EXAMPLE

A molding composition comprised (by weight) 6.2 parts PA6<sup>v</sup> (a  
branched polyamide (PA) described in EP 409115); 25.4 parts Grilon  
A28 (linear, partially crystalline PA6); 16.2 parts Grivory G21  
(amorphous co-PA); 50 parts glass fiber; 1.5 parts PA6/carbon black  
(25%) masterbatch, and 0.7 parts additives. PA6<sup>v</sup> was prepared by  
reacting oligomeric styrene-maleic anhydride copolymer with  
caprolactam and tridecylamine. Moldings made from this composition  
had surface gloss (at 60°) of 80, dry, and 81 after being conditioned  
according to ISO 1110; contrast 65 and 61 for a similar composition  
containing only Grilon A28.

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TECHNOLOGY FOCUS

Polymers - Preferred Composition: (A) comprises 0.5-80, preferably 1-64.5, wt. % (I); 15-98.5, preferably 18-79.5, wt. % (II); 1-35, preferably 20-35, wt. % (III) and 0-2, preferably 0.5-2, wt. % carbon black. At processing temperature it has melt viscosity, at shear rates 200 and 1000 reciprocal s, of below 300 and below 150 Pas, respectively. Typical (C) are modifiers of impact strength; heat or processing stabilizers, or lubricants. Preferred Materials: Typical (I) are PA 6, 66, 12, 6T, 6T12 and/or 12T, optionally with terephthalic acid (T) partly replaced by isophthalic acid (I) or adipic acid. (II) is derived from PA 6, 11 or 12 and has more than 3 arms. It has relative viscosity (1% in sulfuric acid at 23°C) below 2.2 and at 30 degC above its melting point has melt viscosity (at shear rate 500 reciprocal s) below 50 Pas. It may include a lubricant, e.g. long-chain alkylene, and has a molecular weight comparable with (I). (III) is particularly PA 6/6T or PAMXD1/MXDT/6I/6T.

Inorganic Chemistry - Preferred Materials: Typical (B) are glass or carbon fibers; talc; mica; kaolin and nanocomposites.

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